

NON-PUBLIC?: N  
ACCESSION #: 8812300132  
LICENSEE EVENT REPORT (LER)

FACILITY NAME: D.C. Cook Nuclear Plant - Unit 1 PAGE: 1 of 4

DOCKET NUMBER: 05000315

TITLE: Spurious ESF Actuation (Reactor Trip) With Concurrent Loss of the  
Reactor Coolant Pumps  
EVENT DATE: 11/23/88 LER #: 88-013-00 REPORT DATE: 12/15/88

OPERATING MODE: 1 POWER LEVEL: 090

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR  
SECTION  
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:  
NAME: J. R. Sampson, Safety and Assessment Superintendent  
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SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: On November 23, 1988 at 2304 hours, Unit One experienced an Engineered Safety Features Actuation (Reactor Trip) from the Loss of Reactor Flow Logic Circuit of the Plant Protection System concurrent with all four Reactor Coolant Pump (RCP) breakers tripping open.

The reactor trip signal was concluded to be a spurious indication of a Reactor Coolant Pump Busses underfrequency condition originating from the Solid State Protection System (SSPS) based on the following: 1) The only trip function that will trip all four reactor coolant pumps and the reactor is an underfrequency signal on at least two out of four RCP busses; 2) There were no relay operations or relay targets indicating an actual low frequency condition; and 3) There were no physical indications of loose connections or relay problems within the SSPS.

In an attempt to prevent recurrence of the trip two SSPS cards (in both Train A and Train B) of SSPS, in which an intermittent failure could cause the same conditions, were replaced.

(End of Abstract)

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## Conditions Prior to Occurrence

Unit One was operating at the administrative limit of 90 percent reactor thermal power at the time of the event.

## Description of Event

On November 23, 1988 at 2304 hours, Unit One experienced an Engineered Safety Features Actuation (Reactor Trip) from 90 percent rated thermal power. The actuation occurred from the Loss of Reactor Coolant Flow Logic Circuit of the Solid State Protection System (EIIS/JC) concurrent with all four Reactor Coolant Pump breakers (EIIS/AB-BKR) tripping open.

The reactor trip signal was concluded to be a spurious indication of a Reactor Coolant Pump Busses (EIIS/AB-BU) underfrequency condition originating from the Solid State Protection System (SSPS) based on the following facts:

1) The only trip function that will trip all four reactor coolant pumps and the reactor is an underfrequency signal on at least two out of four Reactor Coolant Pump (RCP) Busses; 2) there were no relay operations or relay targets indicating an actual low frequency condition; and 3) there were no physical indications of loose connections or relay problems within the SSPS.

Following the trip sequence (opening of the reactor trip breakers (EIIS/JE-BKR), turbine (EIIS/TA-TRB) trip, insertion of the reactor control rods (EIIS/AA-ROD), feedwater isolation (EIIS/JB)), and automatic starting of the motor driven feedwater pumps (EIIS/BA-P), Operations personnel immediately implemented the Emergency Operating Procedure 1-OHP 4023.E-O to verify proper response of the automatic protection system (EIIS/JC) and to assess plant conditions for initiating appropriate recovery actions. There was no automatic or manual actuation of the Safety Injection System (EIIS/BQ).

During the plant trip response the only problems noted with safety related equipment were in relation to the Control Room Instrument Distribution (CRID) Inverter (EIIS/EF-INVT) and a Steam Generator Steam Flow Signal.

CRID II Inverter had an "inverter abnormal" alarm (EIIS/EJ-ALM) immediately after the trip, most likely caused by the starting of auxiliary DC lube oil pumps (EIIS/SL-P) (reducing CRID II DC Input voltage and causing an alarm). This alarm cleared within seconds after it was noticed and had no adverse effect on the functioning of CRID equipment.

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Description of Event (Cont'd)

One of the two Steam Flow Channels (EIIS/SB-CHA) on the Number 13 Steam Generator (EIIS/SB-SG) remained high for a short time after the trip. The channel read 0.8E+6 pounds per hour when no or minimal steam flow was actually present. The channel subsequently returned to a correct position and showed no further signs of problems. This one channel remaining high had no adverse effect on this event.

The unit was stabilized in Mode 3 (Hot Standby) at approximately 2314 under natural circulation conditions. An Unusual Event was declared at 2320 hours as the result of the loss of one or more Reactor Coolant Pumps above 50 percent power as required by the Plant Emergency Classification procedure PMP 2080 EPP.101. Notification to the State and local authorities occurred at 2329 hours and 2330 hours, respectively. The Nuclear Regulatory Commission was notified of the event via the Emergency Notification System at 2335 hours. The Unusual Event was closed out when a reactor coolant pump was started and forced circulation was obtained at 0154 hours on November 24, 1988.

There were no inoperative structures, components, or systems that contributed significantly to this event.

#### Cause of the Event

Could not be determined. Concluded to be a spurious indication of a Reactor Coolant Pump Busses underfrequency condition originating from the Solid State Protection System.

#### Analysis of Event

This event is being reported in accordance with 10CFR50.73 (a)(2)(vi) as an event that resulted in an unplanned automatic actuation of an Engineered Safety Feature including the Reactor Protection System.

The automatic system response, including reactor trip and its associated actuations, were verified to have functioned properly as a result of the engineered safety features actuation. Based on the above, it is concluded that the event did not constitute an unreviewed safety question as defined in 10 CFR50.59 (a)(2) nor did it adversely impact the health and safety of the public.

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#### Corrective Action

Immediate corrective action involved Operations personnel implementing plant

procedures to verify proper response of the automatic protection system and to assess plant conditions for initiating of appropriate recovery actions.

In an attempt to prevent recurrence of the trip two Train B SSPS cards, in which an intermittent failure could cause the same condition which resulted in the trip, were replaced on November 24, 1988 (the Train B underfrequency universal logic card and the safeguards driver card). A similar replacement of cards in SSPS Train A was made December 2, 1988 as a precautionary measure.

All suspect cards are being subjected to further testing in an effort to determine root cause.

#### Failed Component Identification

None.

#### Previous Similar Events

None.

ATTACHMENT # 1 TO ANO # 8812300132 PAGE: 1 of 1

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Power Company  
Cook Nuclear Plant  
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616 465-5901

December 19, 1988

United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Operating License DPR-58  
Docket No. 50-315

Document Control Manager:

In accordance with the criteria established by 10 CFR 50.73 entitled Licensee Event Reporting System, the following report is being submitted:

88-013-00

Sincerely,  
/s/ W. G. SMITH  
W. G. Smith, Jr.  
Plant Manager

WGS:clw  
Attachment  
cc: D. H. Williams, Jr.  
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